DETERMINATION OF TRANSVERSE DISTRIBUTOR SPREAD RATE
(A modification of Tentative Test Calif. 339 - A)

Scope

1. This description covers the field test procedure for determining the transverse spread rate in gallons per square yard of bituminous distributors.

Apparatus

2. The apparatus shall consist of the following:

(a) Balance. The balance shall conform to AASHTO M 213, Class D.

(b) Suitable weighing box or shield for balance.

(c) Metal sheets 7-7/8 x 84, 20 gauge galvanized.

(d) Balance table and work table. Light metal camp tables have been found very convenient.

(e) 1 x 6 x 8 boards. (For alternate sampling procedure)

Materials

3. (a) Cotton gauze pads 4 x 8, 12 ply.

(b) 5″ x 12″ strips cut from heavy wrapping paper.

(c) Masking tape, ½″ width.

(d) Scotch tape, ¾″ width

(e) Rubber cement for fastening cotton pads to paper strips.

Preparation of Test Plates

4. (a) Attach a cotton pad to each paper strip with rubber cement, then secure each corner of the cotton pad with a staple. Pads are to be placed on the paper strips as shown in Figure 1.

NOTE: Normally one cotton pad will be adequate, but when testing with heavy spread rates or rubberized asphalt it may be necessary to staple an additional pad to each paper strip. In fastening cotton pads to the paper strips the application of rubber cement should be heavy enough to hold the pad to the paper, but not so heavy that it blocks the absorption of the pad.

(b) Place a strip of scotch tape along each end of the paper strip as shown in Fig. 1. This will allow the masking tape to be easily removed from the paper strip during the removal process in 5 (c) or 6(e).

(c) Place an identification number on the back of each assembled paper strip and cotton pad.

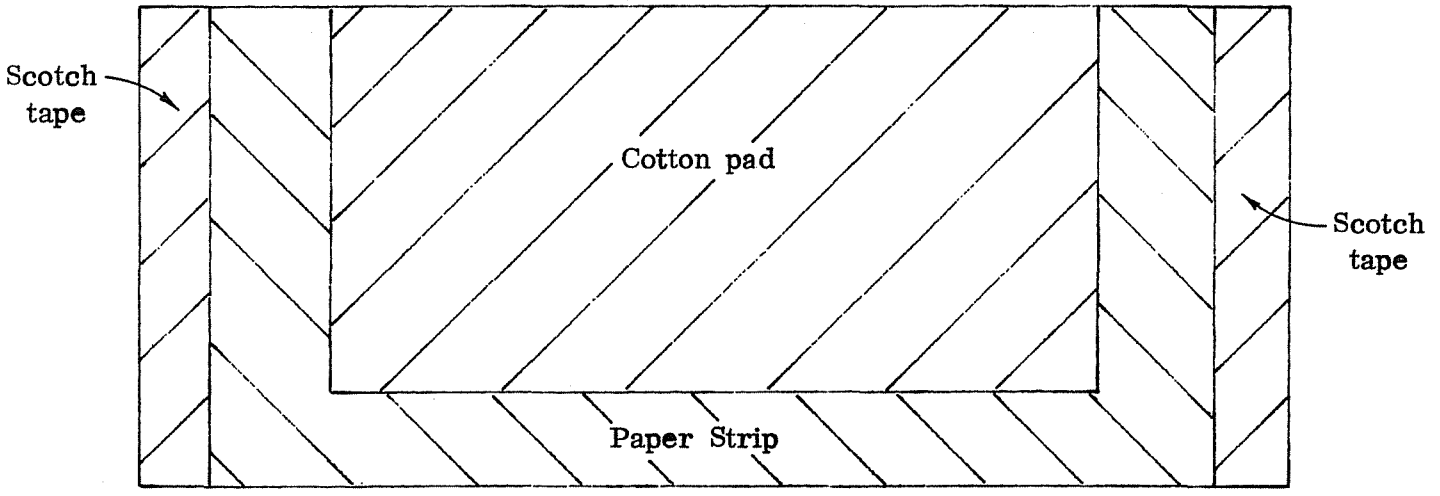

Figure 1.

(d) Weigh the pads with the paper backing attached after they are thoroughly dry to determine the average tare weight. Record to the nearest 0.1 gram.

(e) Attach the paper strips to the metal sheet so that the cotton pads are snug against each other by overlapping the adjacent strips 1 inch, and securing to metal sheet with masking tape on reverse side. (21 paper strips with pads attached will be required to fabricate one test place.)

(f) Wrap assembled test plates in heavy wrapping paper to keep them clean while being stored or transported to test site.

Sampling

5. (a) As the distributor approaches, place the test plates across the roadway, with pad no. 1 being toward the centerline of the roadway and numbering increasing towards the shoulder of the road.

NOTE: Do not allow traffic to drive over the sample pads (the relatively slow moving distributor does not disturb the test plates).

(b) When the distributor has passed leave the test plates in place a short time to allow the bituminous material to harden slightly and prevent running on the pads, then remove test plates from the pavement.

(c) Place the test plate assembly on the work table, then remove and fold each pad and paper strip, starting with the highest number and proceding to the lowest number, stacking folded pads on the top of each other. (Care should be taken not to remove any of the paper when removing the masking tape.)

(d) As soon as the removal operation is completed place the pads in the weigh box, and then weigh in order to the nearest 0.1 gram. Record the weight of each pad, starting the recording with pad no. 1, the pad nearest the centerline of the pavement. If a tare is used during weighing, record the net weight of the bitumen, otherwise the previously determined average weight of the individual pads must be subtracted from the total weight of pad + bitumen.

NOTE: In very hot weather, remove and weigh the sample pads in the shade and with as little delay as possible. If substantial delay occurs, prepare a control sample with a known weight of binder and weigh at intervals to determine the evaporation loss rate and a correction.

Alternate Sampling Procedure

6. *NOTE: This procedure allows for sampling distributor trucks in restricted areas where normal applications are not possible.*

(a) Place 1" x 6" x 8' boards in a suitable location and then lay test plates on top of the boards, with pad no. 1 being on the drivers side of the truck.

NOTE: Boards should be protected from bituminous material by wrapping them in heavy paper.

(b) Back distributor truck up to test plates so that the back wheels of the truck are a few inches from the test plates.

(c) Drive the distributor truck forward at a constant rate and apply bituminous material across test plates.

(d) After spraying operation leave the test plates in place a short time to allow the bituminous material to harden slightly and prevent running on the pads, then remove the test plates and boards.

(e) Place the test plate assembly on the work table, then remove and fold each pad and paper strip starting with the highest number and proceding to the lowest number, stacking folded pads on the top of each other. (Care should be taken not to remove any of the paper when removing the masking tape.)

(f) When the removal operation is completed weigh the pads in order, to the nearest 0.1 gram. Record the weight of each pad, starting the recording with pad no. 1, the pad nearest the drivers side of the truck. If a tare is used during weighing, record the net weight of the bitumen, otherwise the previously determined average weight of the individual pads must be subtracted from the total weight of pad + bitumen.

Calculations

7. (a) Multiply the net weight of binder on each pad by 0.0107, or use the table found in Figure 2 to obtain the spread rate in gal./sq. yd. to the nearest .001 gal.

(b) Determine the average spread rate in gal./sq. yd. by dividing the total quantity of binder collected on the pads by the number of pads. Omit end pads that show very low spread rates due to feathering and also end pads showing a heavy rate due to the use of shields. Normally those to be eliminated can be determined by inspection but if a more uniform method is desired the following

procedure may be used: Calculate the average spread rate using all pads having a binder content of over 0.050 gal/sq. yd. Omit all end pads varying by more than the specified limits from the above calculated average spread rate, then recalculate the average spread rate.

Report

8. Report the following:

(a) The spread rate in gal./sq. yd. for each test pad, to the nearest .001 gal.

(b) The average spread rate in gal./sq. yd. to the nearest .001 gal.

(c) Any test pads varying by more than the specified limits from the average spread rate.

(d) For further study the spread rate in gal./sq. yd. for each test pad, the average spread rate, and the specified limits may be plotted on graph paper.

CONVERSION TABLE
Net weight of binder on 4" x 8" pads to gals./sq. yd.

grams	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
8	.086	.087	.088	.089	.090	.091	.092	.093	.094	.095
9	.096	.097	.098	.099	.100	.102	.103	.104	.105	.106
10	.107	.108	.109	.110	.111	.112	.113	.114	.116	.117
11	.118	.119	.120	.121	.122	.123	.124	.125	.126	.127
12	.128	.129	.131	.132	.133	.134	.135	.136	.137	.138
13	.139	.140	.141	.142	.143	.144	.146	.147	.148	.149
14	.150	.151	.152	.153	.154	.155	.156	.157	.158	.159
15	.160	.162	.163	.164	.165	.166	.167	.168	.169	.170
16	.171	.172	.173	.174	.175	.177	.178	.179	.180	.181
17	.182	.183	.184	.185	.186	.187	.188	.189	.190	.192
18	.193	.194	.195	.196	.197	.198	.199	.200	.201	.202
19	.203	.204	.205	.206	.208	.209	.210	.211	.212	.213
20	.214	.215	.216	.217	.218	.219	.220	.221	.223	.224
21	.225	.226	.227	.228	.229	.230	.231	.232	.233	.234
22	.235	.236	.237	.239	.240	.241	.242	.243	.244	.245
23	.246	.247	.248	.249	.250	.251	.252	.254	.255	.256
24	.257	.258	.259	.260	.261	.262	.263	.264	.265	.266
25	.267	.269	.270	.271	.272	.273	.274	.275	.276	.277
26	.278	.279	.280	.281	.282	.284	.285	.286	.287	.288
27	.289	.290	.291	.292	.293	.294	.295	.296	.297	.298
28	.300	.301	.302	.303	.304	.305	.306	.307	.308	.309
29	.310	.311	.312	.313	.315	.316	.317	.318	.319	.320
30	.321	.322	.323	.324	.325	.326	.327	.328	.330	.331
31	.332	.333	.334	.335	.336	.337	.338	.339	.340	.341
32	.342	.343	.344	.346	.347	.348	.349	.350	.351	.352
33	.353	.354	.355	.356	.357	.358	.359	.361	.362	.363
34	.364	.365	.366	.367	.368	.369	.370	.371	.372	.373
35	.374	.376	.377	.378	.379	.380	.381	.382	.383	.384

Figure 2